REMARKS

This amendment is being presented in response to the Examiner's action of November 20, 2003. The Examiner has indicated that claims 1-28 have been rejected. In light of the following detailed arguments, it is respectfully submitted that the claims fully distinguish over the applied prior art.

The Examiner has objected to the specification, noting that "layers 50 and 53 in Figure 3 are not disclosed, no description of layers 50 and 53 are in the specification". Applicant respectfully asserts that the drawing (Figure 3) illustrates an outboard lite 45 comprising glass substrate 47 and a multi-layer coating 49. An air space 51 is disposed between outboard lite 45 and the inboard lite. All of the forgoing is disclosed in the specification as filed. However, it is noted that the inboard lite was incorrectly given reference numeral "53" in the specification and reference numeral "50" on Figure 3. Therefore, to correct this inconsistency, the specification has been amended to replace reference numeral "53" with reference numeral "50", so that the reference numerals are consistent throughout the specification and drawings. It is therefore believed that the specification and drawings are now in condition for allowance.

Claims 24 and 25 have been rejected under 35 USC §112, first paragraph, as not enabling one skilled in the art to make and/or use the invention. Specifically, the Examiner points out that the disclosure contains no description of two panes of uncoated glass, nor how two panes of uncoated glass are utilized with the rest of the invention.

In response thereto, applicants respectfully assert that, first, the reference to two sheets of uncoated glass in a panel is merely a comparative reference and is not the actual structure

claimed therein. The claims merely compare properties of the claimed article to a similar article comprising uncoated glass sheets. Further, it is respectfully submitted that one skilled in the art would recognize that an insulated glass unit comprising panes of uncoated glass could be made in exactly the same manner as an insulated glass unit comprising coated glass. The coatings themselves have no effect on the actual construction of the unit, and one skilled in the art would recognize that it could be made in the same manner as could a IGU with coated glass articles. Finally, it is respectfully submitted that such a construction of an insulated glass unit from uncoated sheets is notoriously well known in the art, and has been known for many years. One skilled in the art of constructing insulated glass units would be well aware of the process for making them. Therefore, it is respectfully requested that this rejection be reconsidered and withdrawn.

The Examiner has withdrawn the previously pending rejections under the Terneu reference alone. Still pending are rejections of claims 1-4, 8-16 and 17-21 under 35 USC §103 as being unpatentable over McCurdy (U.S. Patent No. 5,780,149) in view of Terneu et al. The Examiner stated that McCurdy teaches a coated glass article comprising a 3 mm thick substrate with first and second coatings, one of which coatings is an antimony doped tin oxide coating, wherein the glass article exhibits a selectivity of 10 or greater. The Examiner acknowledges that McCurdy is silent as to the second coating being fluorine doped tin oxide deposited on and adhering to the coating of antimony doped tin oxide. The Examiner attests that the Terneu reference discloses that the inclusion of a fluorine doped tin oxide layer on an antimony doped layer provides a low solar factor and emissivity. The Examiner therefore asserts that it would

have been obvious to one skilled in the art to replace the second layer with a fluorine doped tin oxide layer.

The Examiner additionally now rejects claims 1-21 under 35 USC §103 as being unpatentable over McCurdy in view of McKown. The Examiner notes that McKown teaches various embodiments of a solar control coated glass. McKown notes that the inclusion of a fluorine doped tin oxide layer on an antimony doped tin oxide layer providesa solar control glass with a neutral blue color. The Examiner then avers that it would be obvious to one having ordinary skill in the art to replace the second layer with a fluorine doped tin oxide layer in order to have a solar control glass with a neutral-blue color.

Before discussing the cited references in detail, applicants again wish to discuss the present invention as defined in the independent claims. Independent claim 1 defines a coated glass article comprising a glass substrate, a coating of antimony doped tin oxide deposited on and adhering to said glass substrate. An additional coating of fluorine doped tin oxide is deposited on and adheres to the first coating. The thicknesses of the coatings are selected to provide a selectivity of thirteen or more.

Independent claim 22 defines an insulating glass unit. The insulating glass unit comprises first and second glass substrates with a multilayer coating stack deposited on the second glass substrate. A first coating of antimony doped tin oxide is deposited on the surface with a second coating of fluorine doped tin oxide deposited on and adhering to the first coating. The second glass substrate exhibits a difference between visible light transmittance and total solar energy transmittance of thirteen or more.

Independent claim 26 also describes a coated glass article comprising a substrate, a coating of antimony doped tin oxide, and a coating of fluorine doped tin oxide deposited on and adhering to the coating of antimony doped tin oxide.

Each of the rejections under 35 USC §103 are based on modifying the McCurdy reference by either the Terneu reference or the McKown reference. As asserted in applicants' response to the previous office action, applicants continue to assert that it is improper to alter the McCurdy reference as done by the Examiner.

As stated previously, the McCurdy reference, which teaches a solar control glass article, teaches that the solar control properties of the glass article are achieved by depositing two distinct layers which essentially function as a single layer in terms of visible light transmittance, but provide interference in the IR range, thus allowing a much greater transmission of visible light than of light in the IR spectrum. This is how the McCurdy reference accomplishes its intended purpose.

This is borne out by the following analysis of McCurdy, which is essentially repeated from the previous response. The McCurdy reference discloses a glass article having a solar control coating for architectural windows. The article includes a glass substrate and an iridescence suppressing interlayer deposited on and adhering to the surface of the glass substrate. The article further comprises first and second transparent coatings deposited on the iridescence suppressing interlayer. Applicants again note that McCurdy ***requires*** that the first and second transparent coatings are chosen such that the difference in the refractive indices of the coatings in the near infrared region are greater than the difference of the refractive indices of the coatings in

the visible region. (See, for example, McCurdy column 3, lines 9-18 and column 5, lines 18-34.) The selection results in an architectural glazing which rejects solar energy in the near infrared region while permitting the transmittance of a high degree of visible light. **Applicants continue to assert that the selection of the coatings based on these criteria is *essential to the stated purpose* of the McCurdy reference.**

McCurdy describes his invention as follows:

> In accordance with the present invention, there is provided a novel glass article useful for producing coated, heat reducing glass for architectural windows. The coated article includes a glass substrate, *an iridescence-suppressing interlayer* deposited on and adhering to the surface of the glass substrate, at least *a first transparent coating* deposited on and adhering to the surface of the iridescence-suppressing coating, and at least *a second transparent coating* deposited on and adhering to the surface of the first transparent coating. The use of the present inventive article in architectural glazings results in a glazing that rejects solar energy while permitting the transmittance of a high degree of visible light. The specific coating stack on a clear glass substrate provides an iridescence free coated article having a *high visible light transmittance and a reduced total solar energy transmittance*.
> Column 2, lines 45-61, emphasis added.

McCurdy goes on to state:

> The present invention utilizes at least a first transparent coating and a second transparent coating that have a difference in refractive indices in the near infrared region greater than a difference in refractive indices in the visible light region. The difference in refractive indices in the near infrared region provides an interface that serves to reflect near infrared radiation. The similar refractive indices in the visible region permits the transmittance of a high degree of visible light. The attenuation of near infrared energy results in a coated article having a reduced solar energy transmittance.
> Column 3, lines 28-31.

Thus, the essential function of the McCurdy reference is to produce an architectural glass

with energy transmission in the visible range greater than energy transmission in the IR range. This is accomplished by depositing first and second coatings on an iridescence suppressing interlayer on a glass substrate, which coatings are designed to provide optical interference in the near IR spectrum, and to provide relatively less optical interference in the visible spectrum. This is done by utilizing layers having refractive indices which are generally similar in the visible spectrum and which differ in the infrared spectrum.

Regarding these refractive indices, McCurdy notes, in column 3, lines 18-25, that:

> The first transparent coating is **generally a doped metal oxide, a doped mixed metal oxide, or metal nitride**. The second transparent coating is **generally a metal oxide or mixed oxide with silica**. The selection of the first and second transparent coatings is made in accordance with prescribed refractive indices to produce the desired transmittance properties. The noted coatings may also possess a low emissivity to minimize heat gain in an architectural glazing.

Thus, the function of the McCurdy reference is accomplished by depositing an iridescence suppressing interlayer on a substrate, followed by a doped metal or mixed metal oxide, followed by an undoped layer.

In contrast, the refractive indices of SnO2:F and SnO2:Sb are very similar in both the visible and in the near infrared regions. A copy of this previously submitted chart is again submitted for the convenience of the Examiner. Based on the forgoing, the inclusion, in the McCurdy reference, of a fluorine doped tin oxide layer adjacent to the antimony doped tin oxide layer would not be obvious to one skilled in the art, as this would be contrary to the purpose of the McCurdy reference. In fact, as stated previously, the inclusion of such a layer would render the McCurdy reference inoperable for its intended purpose, that is to allow the transmission of

visible light, while reducing the transmission of near infrared radiation.

In paragraph 34 of the current Office Action, the Examiner again opines that applicants "continual allegation" that "the visible spectrum and spectral transmittances of McCurdy, the selection of the coatings of McCurdy, are somehow essential to the stated purpose of the McCurdy reference and different from the instant application, is not a persuasive argument." Applicants agree with the Examiner that the McCurdy reference and the present invention each envision a solar control glass article, but only insofar as that is a goal of each of the inventions. One skilled in the art of glass coatings would, from reading the McCurdy reference, understand that this reference functions by interference in the IR spectrum and allowing light in the visible spectrum to be transmitted. The Examiner continues to assert that one skilled in the art would utilize the fluorine doped tin oxide of either Terneu or McKown but applicants again submit that this is not at all the case. One skilled in the art of glass coatings would understand how the McCurdy reference is designed to function. One skilled in the art would recognize that substitution of a doped tin oxide layer adjacent to the antimony doped tin oxide layer would prevent the favorable confluence of optical properties that the inventors achieved in McCurdy. One skilled in the art would realize that modifying the McCurdy reference as suggested by the Examiner would prevent the McCurdy reference from functioning as described therein. Further, one skilled in the art would have no motivation to add a doped tin oxide layer to the McCurdy reference as one so skilled would anticipate that the favorable confluence of optical properties described by McCurdy would not occur if modified as suggested by the Examiner.

The Examiner states that applicants' reliance on *in re Gordon* is incorrect, because the

prior art does not teach away from any modification. Applicants respectfully disagree with this assertion of the Examiner. As explained above, the McCurdy reference functions by placing layers with differing optical properties in the infrared and visible spectra next to each other, thus providing higher transmission in the visible spectrum and more interference (thus less transmission) in the infrared spectrum. This is how the claimed and defined function of McCurdy, as a solar control glass, operates. The Examiner also states that this purpose of McCurdy is of no consequence as the rejection was made over a combination of McCurdy and Terneu (or now McKown). Applicants, to the contrary, assert that this is the heart of the issue at hand, as the modification of the McCurdy reference in light of either Terneu or McKown, would thwart the stated function of the McCurdy reference.

It is thus, again, respectfully submitted that the teaching of *In re Gordon* is directly applicable to the present application. Adding the fluorine doped tin oxide layer of Terneu or McKown to the invention of McCurdy would render McCurdy inoperative for its stated purpose, which is to maximize the transmission of visible light while blocking near infrared radiation by utilizing a pair of coatings that have similar refractive indices in the visible range and differing refractive indices in the near infrared region. Thus, not only would one skilled in the art have no motivation to combine the references, such combination is improper, and against well established law.

Further, in light of the above discussion, McCurdy teaches away from its combination with either McKown or Terneu. McCurdy, as stated above, requires a doped metal oxide layer adjacent an undoped metal oxide layer, the layers being selected for the optical properties that

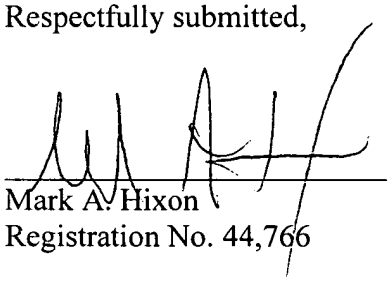
they provide. One skilled in the art of coatings on glass would not look to the fluorine doped tin oxide layer of either McKown or Terneu to modify the McCrudy reference, as this is specifically taught away from.

Based upon the above, it is submitted that the combination of McCurdy and either Terneu or McKown is improper and should be withdrawn.

The dependent claims 2-21, 23-25, and 27-28, are believed to be allowable based, at least, upon their dependence on allowable base claims as discussed above.

In view of the above remarks, a favorable reconsideration of the present application and the passing of this application to issue with all claims allowed are courteously solicited. If the Examiner wishes to modify any of the language of the claims in an effort to move the application towards allowance, a telephone call to the undersigned would be greatly appreciated.

Respectfully submitted,



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